

Patent Claims

1. Temperature measuring device for measuring the temperature of a fluid that is flowing in a tube (1), whereby an electric temperature sensor is attached to a tube section so that it does not move radially and axially, ~~and the temperature sensor is mounted mechanically affixed on the outer side of the tube section, whereby the temperature sensor is protected to the outside through a housing (8, 9, 7, 13) that surrounds the tube section, and a connection cable that is connected affixed to the sensor electrically and mechanically is conducted through an opening (20) out of the housing (7, 8, 9, 13),~~ characterized in that the temperature sensor (2) is mounted mechanically affixed on the outer side of the tube section (1) using a paste that conducts well thermally and electrically, whereby the temperature sensor (2) is protected to the outside by a housing (6, 21) that surrounds the tube section at a distance and that a connection cable (4, 19) that is electrically and mechanically affixed to the sensor (2) is conducted through an opening out of the sheath-shaped housing (6, 21).

2. Temperature measuring device according to claim 1, characterized in that the tube section (1) provided with the temperature sensor (2) is positioned axially in the housing (6, 21) using two rings (7, 8) or tube flanges (55, 56) arranged at a distance from each other.

3. Temperature measuring device according to claim 1 or 2, characterized in that the temperature sensor (2) is connected, via strip conductors (2) mounted along the tube section (1), to the end of the connection cable (4, 19).

4. Temperature measuring device according to one of the claims 1 to 3, characterized in that a surface-mountable temperature sensor (2) is mounted on the tube section (1).

5. Temperature measuring device according to claim 4, characterized in that a platinum thin layer resistor is mounted as a temperature sensor (2) onto the outer side of the tube section (1).

6. Temperature measuring device according to one of the claims 1 to 5, characterized in that the housing (6) is constructed in a sheath shape, whereby the tube section (1) provided with the temperature sensor (2) is connected on each of its two ends to a tube section (11, 12), as seen in the axial direction, which has a hose connection end with a flange (13, 14).

7. Temperature measuring device according to claim 6, characterized in that the sheath-shaped housing (6) is made out of two semi-cylindrically constructed parts (6', 6'') which are connected to each other via a flexible film hinge (35).

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8. Temperature measuring device according to claim 7, characterized in that the film hinge (35) has a pivot axis, which runs parallel to the axis (10) of the tube section (1).
9. Temperature measuring device according to claim 8, characterized in that diametrically opposite the film hinge (35), a sealing device is provided, which is formed through at least one bracket (37) that catches in a recess (36) of the opposing part (6').
10. Temperature measuring device according to claim 9, characterized in that two brackets (37) are arranged at a distance along one line parallel to the axis (10), which catch in opposing recesses (36) such that the connection cable (4) is clamped between both brackets (37) in a form-fit manner with its end in the axial direction along the separation line of both parts (6', 6'') of the sheath-shaped housing (6).
11. Temperature measuring device according to one of the claims 1 to 10, characterized in that all three tube sections (1, 11, 12) are part of a single-piece tube made of ceramic material that is a good thermal conductor.
12. Temperature measuring device according to one of the claims 1 to 5, characterized in that the tube section provided with the temperature sensor (2) as a part of the carrier structure (1) is surrounded by a housing (21) of a function module, whereby the tube section (1) is positioned axially on its two ends with two tube flanges (55, 56).
13. Temperature measuring device according to claim 12, characterized in that the tube flanges (55, 56) are also constructed as spacer elements for the support of the carrier structure in the radial direction.
14. Temperature measuring device according to claim 12 or 13, characterized in that the tube flanges (55, 56) have surrounding grooves (59, 60), which are provided to receive O-rings (57, 58) for sealing off the carrier structure (21) from the flowing fluid at its respective intake and outlet.